REMARKS

Claims 1-14 and 27-29 are pending and rejected. Claims 1, 4-7, 9-14, 27 and 29 have been amended, and claims 3 and 15-26 have been cancelled, without prejudice to pursue the original claims in a related application. Claims 30-33 are new. Thus, after entry of this amendment, claims 1-2, 4-14 and 27-33 are currently pending. No new matter has been added.

Rejections under 35 USC §101

Claims 1-14 and 27-29 were rejected under 35 USC §101 for being directed to non-statutory subject matter.

In response, independent claims 1 and 27 have been amended to overcome these rejections. Hence, Applicant respectfully requests reconsideration of these claims and their respective dependent claims and withdrawal of the rejections.

Rejections under 35 USC §102(b) and §103(a)

In response to the rejections of the claims under 35 USC §102(b) and §103(a), the claims have been amended to more distinctly claim the subject matter of the invention, as disclosed in the present application.

In the background section, the present application discloses that, in reference to laser beams, it is important to know something about the beam quality of the laser; i.e., how the laser beam departs from a theoretical perfect laser beam. The beam quality affects how the beam propagates and focuses. In some applications, it is desirable to know how well the laser can focus the beam in a small interaction area.

As such, claim 1 is directed to a method of determining beam quality (BQ) of a laser. As shown in Fig. 2, laser 202 generates a laser beam 204, which is split into a first test beam and a second test beam by a beam splitter 206. A first test beam or first portion of laser beam is directed to impinge on a power meter reference 208. A second test beam

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or second portion of laser beam is directed toward a transform lens 210 and through a pinhole of a test area 212. A power meter 214 is positioned behind the test area 212 to measure the power out of the pinhole of the test area 212. *For support, see Applicant's specification, page 9, lines 6-29.*

Accordingly, present independent claim 1 has been amended to reflect this subject matter. As such, claim 1 recites the following limitations:

> determining a first measured value of the laser beam based on the power of a first portion of the laser beam;
> determining a second measured value of the laser beam based on the power of a second portion of the laser beam;

As disclosed in reference to Fig. 1, the power measured at power meter 214 is normalized by comparing (e.g., dividing) the power measured through the pinhole of the test area 212 with the power measured without going through a pinhole at the power meter reference 208. *For support, see page 7, line 31 to page 8, line 1.*

Accordingly, present independent claim 1 has been amended to reflect this subject matter. As such, claim 1 recites the following limitations:

> calculating a normalized measured value by comparing the second measured value to the first measured value;

As disclosed in reference to Fig. 1, once the normalized power is determined, the beam quality may be calculated by comparing the value of the normalized power with the reference value from a theoretical Gaussian laser beam. For example, the beam quality may be calculated by taking the square root of the fractional power (i.e., reference value of 0.8647 or $1\text{-}e^{-2}$) of a theoretical Gaussian beam divided by the measured power of the test beam, as shown in block 118 of Fig. 1. *For support, see page 8, lines 26-34.*

Accordingly, present independent claim 1 has been amended to reflect this subject matter. As such, claim 1 recites the following limitations:

> providing a reference value from a theoretical Gaussian laser beam;
> calculating beam quality of the laser beam by comparing the normalized measured value with the reference value;

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In view of the discussion above, Applicant respectfully traverses the rejections of the pending claims over the Johnston reference (US 5,078,491).

In Fig. 16, Johnston discloses a device 100 for measuring the mode quality of a laser beam 10. The device 100 includes a rotating hub 134 for chopping the laser beam 10 and an adjustable lens 132 for creating a transformed waist. The transmission of the laser beam 10 past the rotating hub 134 is measured by a detector 130 that measures the transmitted power of the laser beam 10.

According to Johnston, the adjustable lens 132 creates a transformed waist from the laser beam 10. The location of the transformed beam waist and its diameter are determined by chopping the laser beam 10 with apertures having knife edges formed in the rotating hub 134. The transmission of the laser beam 10 past the knife edge is monitored by the detector 130. In operation, the focal position of the lens 132 is varied while the transmission of the laser beam 10 past the knife edge is monitored to locate and measure the diameter of the transformed waist. A processor calculates beam quality of the laser beam 10 by fitting these measurements to a mathematical model. Once the quality of the beam is calculated, the location of the original beam waist and its diameter are derived. Once all of the beam parameters are derived, the propagation characteristics of the laser beam 10 are predicted. The measurement of the power transmitted past the knife edge is used to calculate beam intensity.

Clearly, the manner in which Johnston calculates beam quality is different than the subject matter of the present application. Johnston fails to determine a plurality of measured values of the laser beam based on the power of a plurality of portions of the laser beam. Johnston fails to calculate a normalized measured value by comparing the measured values. Johnston fails to calculate beam quality by comparing the normalized measured value with a reference value from a theoretical Gaussian laser beam.

In sharp contrast to Johnston, present amended claim 1 recites, "determining a first measured value of the laser beam based on the power of a first portion of the laser beam; determining a second measured value of the laser beam based on the power of a second portion of the laser beam; calculating a normalized measured value by comparing

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the second measured value to the first measured value; providing a reference value from a theoretical Gaussian laser beam; and calculating beam quality of the laser beam by comparing the normalized measured value with the reference value." Johnston fails to disclose all of these features of claim 1.

Therefore, present independent claim 1, as amended, and its dependent claims are allowable over Johnston, and such allowance is respectfully requested.

Present independent claim 27, as amended, has analogous subject matter as discussed above in reference to claim 1. Accordingly, this independent claim and its dependent claims are allowable over Johnston for at least the same reasons, and such allowance is respectfully requested.

New claims 30-33 are dependent on claim 1 and are considered allowable for at least the same reasons as claim 1.

Accordingly, claims 1-2, 4-14 and 27-33 are in condition for allowance, and such allowance is respectfully requested.

CONCLUSION

For the foregoing reasons, Applicant believes that the currently pending claims are allowable for at least the reasons discussed above, and therefore a notice of allowance is respectfully requested. If the Examiner has any questions regarding the application, the Examiner is invited to call the undersigned Attorney at (949) 752-7040.

Certification of Facsimile Transmission
I hereby certify that this paper is being facsimile transmitted to the U.S. Patent and Trademark Office, Fax. No. 571-273-8300, on the date shown below.

Lina Kavanaugh April 23, 2008

Respectfully submitted,

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